CLAIMS

What is claimed is:

1. A device for producing the flow of electrons due to solar energy being incident thereon comprising:

at least one solar cell photovoltaic substrate material; and

at least one means for modifying at least a portion of the photoreactive portion of the solar spectrum from sunlight, said at least one means being positioned between said at least one solar cell substrate material and incident sunlight, whereby said at least one means permits limited energies of the photoreactive portion of the solar spectrum to pass therethrough so as to reduce negative interactions within said solar cell photovoltaic substrate material relative to unfiltered incident sunlight.

2. The device of claim 1, wherein at least one means for modifying at least a portion of the photoreactive portion of the solar spectrum from sunlight comprises at least one material.

3. The device of claim 2, wherein said at least one material comprises at least one cover material which covers at least a portion of at least one surface of said at least one solar cell photovoltaic substrate material.

4. The device of claim 1, wherein said at least one substrate material comprises at least one semiconductor material.

5. The device of claim 4, wherein said at least one semiconductor material comprises at least one material selected from the group consisting of amorphous silicon, crystalline silicon and cadmium sulfide.

6. The device of claim 1, wherein said at least one means for modifying at least a portion of the photoreactive portion of the solar spectrum from sunlight minimizes the amount of destructively interfering wavelengths of sunlight incident on said photovoltaic substrate material.

7. The device of claim 1, wherein said limited energies of at least a portion of the photoreactive portion of the solar spectrum from sunlight correspond to at least one primary wavelength of light corresponding in energy to at least one primary band gap width in said photovoltaic substrate and at least some harmonics and at least some heterodynes of said at least one primary wavelength of light.

8. The device of claim 7, wherein said at least some harmonics comprise substantially all harmonics.

9. The device of claim 7, wherein said at least some heterodynes comprise substantially all heterodynes.

10. The device of claim 1, wherein said limited energies of at least a portion of the photoreactive portion of the solar spectrum from sunlight correspond to a plurality of primary frequencies of light which correspond in energy to at least one primary band gap width in said at least one solar cell photovoltaic substrate as well as a plurality of groups of frequencies of light which correspond to a plurality of harmonics and a plurality of heterodynes of said plurality of primary frequencies.

11. The device of claim 10, wherein said plurality of primary frequencies correspond to those frequencies which are distributed substantially symmetrically about a primary frequency which corresponds to said at least one primary band gap width, said plurality of primary frequencies including substantially all of those frequencies which correspond to at least about one-half of the maximum amplitude associated with said primary frequency.

12. The device of claim 10, wherein said plurality of harmonics correspond to those frequencies which are distributed substantially symmetrically about each harmonic frequency and which comprise those frequencies which correspond to at least about one-half of the maximum amplitude associated with each said harmonic frequency.

13. The device of claim 10, wherein said plurality of heterodynes correspond to those frequencies which are distributed substantially symmetrically about each heterodyne frequency and which comprise those frequencies which correspond to at least about one-half of the maximum amplitude associated with each said heterodyne frequency.

14. A method of increasing the efficiency of a solar cell material comprising:

determining at least one set of energies selected from the group of energies consisting of desirable energies and undesirable energies from at least a portion of the photoreactive portion of the solar spectrum from that can be applied to a solar cell photovoltaic substrate material to result in the promotion of electrons to a conduction band, said conduction band being an inherent characteristic of said solar cell material;

determining at least one means for filtering sunlight, such that said means for filtering reduces the amount of undesirable energies from at least a portion of the photoreactive portion of the solar spectrum from being incumbent on said solar cell material; and

combining said at least one substrate material and said at least one means for filtering sunlight together in a solar cell.

15. A method for determining desirable energies from at least a portion of the photoreactive portion of the solar spectrum to be incident on a solar cell substrate material comprising:

determining at least one primary band gap width present in a solar cell substrate material;

determining at least one primary wavelength of a light corresponding in energy to said at least one primary band gap width; and

determining at least one harmonic and at least one heterodyne of said at least one primary wavelength of light.

16. The method of claim 15, wherein substantially all desirable harmonics and substantially all desirable heterodynes of said at least one primary wavelength of light are determined.